# US5790427:Event history data acquisition

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Abstract:

An event data recorder and method for recording data relating to a distinct event which pertains to operation of a mechanism. The recorder comprises a device for collecting data pertaining to such operation and formatting such data into a sequence of data elements. A circular buffer is linked to the collecting and formatting device for temporarily storing a number of data elements. The elements are stored on the buffer as a newest element continuously writes over an oldest element as a storage limit of the buffer is reached. The recorder also includes a timer of predetermined duration which activates upon each occurrence of such event. The recorder has a memory device for retaining the data elements. The elements can be accessed therefrom for analysis of such operation of such mechanism surrounding such event. The recorder further includes a data element transfer device, connected to the timer, for transferring the elements from the buffer to the memory device wherein for each occurence of such event a preselected number of the data elements stored prior to, and including, an instant the timer deactivates is transferred by the transfer device from the buffer to the memory device. A data log is thereby formed within the memory device from which the elements may be accessed for analysis of such operation of such mechanism.

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Examiners: Voeltz; Emanuel T.; Bui; Bryan

First Claim: Show all 22 claims

We claim:

1. An event history data recorder for recording data relating to a distinct event and pertaining to operation of a mechanism preceding and following each occurrence of such distinct event, said recorder comprising:

**(a)** a means for collecting data pertaining to such operation of such mechanism and relating to such distinct event and for formatting such collected data into a sequence of data elements, said data collecting and formatting means further includes means for assigning sequentially and incrementally an index number to each of said data elements as such collected data is formatted into said sequence of data elements so as to form a sequence of index number-data element units;

**(b)** a circular buffer linked to said collecting and formatting means for temporarily storing a preset number of said data elements, said data elements being continuously stored on said circular buffer as a newest data element continuously writes over an oldest data element as a storage limit of said circular buffer is reached and as said circular buffer so continuously stores, said circular buffer includes means for temporarily storing said preset number of said index numbers so that said index number-data element units are continuously stored on said circular buffer as a newest index number-data element unit as said storage limit of said circular buffer is reached and as said circular buffer so continuously stores;

**(c)** a timer of predetermined duration activated upon each occurrence of such distinct event for said predetermined duration;

**(d)** a memory device for retaining said data elements and from which said data elements can be accessed for analysis of such operation of such mechanism surrounding such distinct event; and

**(e)** a means, connected to said timer, for transferring said data elements from said circular buffer to said memory device, said transferring means includes means for denoting a stop index number, said index number contained within said index number-data element unit being stored onto said circular buffer at an instant said timer deactivates and a means for denoting a start index number plus one less a preselected number; wherein for each occurrence of such distinct event, said preselected number of said data elements stored prior to, and including, said instant said timer deactivates is transferred by said transferring means from said circular buffer to said memory device thereby forming a data log within said memory device from which said data elements recorded therein may be accessed for analysis of such operation of such mechanism.